REMARKS

After entry of the complete listing of the claims provided above, claims now pending in this application include 283-362, 364-380, 382-398, 400-404, 406-439, 441-505, 507-508, 510-511 and 528-547. Claims 380 and 510 have been amended. Claims 506, 516-525, 527 and 548-549 have been CANCELLED. No claims have been added by this paper. Entry of the above listing and claim amendments is respectfully requested since this paper (Amendment Under 37 C.F.R. §1.116) either places the application in condition for allowance or reduces issues if an appeal becomes necessary.

Before addressing the claim amendments and the issues that were discussed at the June 29, 2005 interview, Applicants wish to express their gratitude for the courtesy and time extended by Examiners Ardin H. Marschel and Michael Woodward to Applicants' representative, Eugene C. Rzucidlo, Esq. of the law firm, Greenberg Traurig, Robert M. Schulman, Esq. of the law firm, Hunton & Williams, and their undersigned attorney.

Summary of June 29, 2005 PTO Interview

The matters that were raised in the May 27, 2005 Office Action were discussed at the June 29, 2005 interview. Fourteen exhibit pages (Exhibits 1, 2 & 4) were presented and made of record in this application. These exhibits fairly reflect the discussions and the interview.

1. **New matter rejection of claims 366-379, 384-398, 402, 408, 510, 516-525, 527 & 548-549**

A. Combination of segments in claims 516 & 524[1]

Applicants' attorney of record began the discussion of this matter by pointing to the support in the '995 specification for "repeating low complexity polynucleotide of a dinucleotide repeat or a trinucleotide repeat." The support was embodied in Exhibit 1(a) [total of 4 pages]. The Examiners responded, noting that claim 516 required "a polynucleotide sequence complementary to a gene sequence or portion thereof." No agreement was reached on the issue of the combination of segments in claims 516 and 524.

B. Hormonal receptor covalently attached to polynucleotide sequence in claim 510

Applicants' attorney cited to several passages in the '995 specification for support of a "hormone receptor" covalently attached to a polynucleotide sequence, as set forth in claim 510. These passages of support are found in Exhibit 1(b) [total of 4 pages]. The Examiner suggested that the term "hormone receptor" would be more appropriate than the currently recited "hormonal receptor." Applicants' attorney indicated that he would amend claim 510 accordingly in their next response.

C. Dependency changes in claims 366, 370, 374-375, 379, 384, 392-393, 397, 402 & 408

In order to save time at the interview to discuss other issues, Applicants' attorney indicated that the issue of the dependency changes would be addressed in their next response.[2] The possibility of providing a table of support for the

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[1] The May 27, 2005 Office Action cited claim 522 in the new matter rejection. Applicants' attorney pointed out at the June 29, 2005 interview that claim 524 should have been properly cited in the rejection.

Claim 524 recites:

> The DNA molecule of claim 522, further carrying a polynucleotide portion which comprises a repeating low complexity polynucleotide sequence of a dinucleotide repeat or a trinucleotide repeat.

[2] Because the matter of the dependency changes were not addressed, no exhibits or proposals were offered at the June 29, 2005 interview.

dependency changes was discussed briefly. The Examiner commented briefly on the basis for this rejection which related to the scope and breadth of the previously recited base claims (363, 381, 399 and 405) and the newly recited base claims (443, 444, 445 and 446). Applicants' attorney acknowledged with appreciation the Examiner's comments.

D. Vagueness and indefiniteness of claims 522-525, 527 & 549

With respect to the "direct signal providing signal generating portion in these claims, Applicants' attorney offered proposed amendments in the form of Exhibit 2 [total of 2 pages] which were made of record.

E. Anticipation rejection by Maniatis et al. (1982) of claims 516-517 & 520-521

The disclosure of Maniatis et al. (1982) was discussed, particularly Figure 1.11 on page 53. Applicants' attorney noted that the sequence listed in this figure did not contain a repeating low-complexity polynucleotide sequence of a dinucleotide repeat or a trinucleotide repeat. The Examiner suggested that Maniatis's sequence (Figure 1.11) would support the anticipation rejection because of the four guanine bases (GGGG) in the top line.

F. Anticipation rejection by Langer et al. (1981) of claim 506

The anticipation rejection based on Langer's 1981 PNAS was discussed, but no agreement was reached.

The interview concluded at this point. This is also the end of Applicants' summary of the June 29, 2005 interview.

II. Changes to the Claims

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1. Claims Cancellations

In a sincere effort to reduce the issues in this application and to place all of the remaining claims in allowable condition, claims 506, 516-525, 527 and 548-549 have been CANCELLED. The cancellation of these claims is made without prejudice or disclaimer to Applicants' right to pursue the subject matter of these claims at a later time.

2. ***Claim Amendments***

Claims 380 and 510 have each been amended. The dependency of claim 380 has been changed from "279" to -- 379 -- . Claim 380 formerly recited "[t]he process according to claim 279, further comprising one or more washing steps." As noted by the Examiner in the May 27, 2005 Office Action, claim 380 was objected to due to its depending from a canceled claim (279). In reviewing the claims, it is clear that claim 380 should have depended from claim 379, the latter reciting "[t]he process according to claim 443, wherein the molecular bridging entity is immobilized."

Claim 510 has been amended to recite "[a] polynucleotide sequence covalently attached to a hormone receptor." This change arose from the Examiner's suggestion at the June 29, 2005 interview.

IV. May 27, 2005 Office Action

The New Matter Rejection Under 35 U.S.C. §112, First Paragraph

Claims 366-379, 384-398, 402, 510, 516-525, 527 and 548-549 stand rejected for new matter under 35 U.S.C. §112, first paragraph. In the Office Action (pages 3-4), the Examiner stated:

> The combination of segments as now set forth via amendment in independent claims 516 and 522 is NEW MATTER. Claims dependent directly or indirectly from claim 516 and 522 are also rejected hereinunder due to their dependence. Original claim 78 and those dependent therefrom, for example, lack the broad dinucleotide repeat or trinucleotide repeat limitation but rather only cite specific dinucleotide and mononucleotide polymer limitations. This broadening of repeat citation over said original claims is NEW MATTER. Consideration of the entirety of the instant disclosure as filed also has failed to reveal written support for said claims 516 or 522 embodiments.
>
> Claim 510 is newly rejected as necessitated by amendment as now citing a hormonal receptor covalently attached to a polynucleotide sequence which has not been found in the entirety of the instant disclosure as filed and therefore is NEW MATTER. In REMARKS, filed 4/29/04, page 12, lines 22-23, of the specification is pointed to regarding support. Consideration of said page 12 citation reveals that the receptor recognized by its hormone is directed to an analyte of the instant invention and not the polynucleotide containing embodiment as now set forth in instant claim 510.
>
> Applicants' REMARKS, filed 4/29/04, indicated that claim dependencies have been changed regarding claims 366, 370, 3674-375, 379, 384, 388, 392-393, 397, 402 and 408. The newly submitted combination of these claims with their new dependencies have not been found as filed and therefore is NEW MATTER. This rejection is necessitated by amendment and is also directed to claims dependent therefrom due to their dependence.

The new matter rejection is respectfully traversed.

With respect to the recitation of dinucleotide repeat and trinucleotide repeat in claims 516 and 524, it is believed that the above cancellation of these claims,

including dependent claims 517-525, 527 and 548-549, obviates the basis of rejection. Withdrawal of this basis of rejection is respectfully requested.

With regard to claim 510, support for "a polynucleotide sequence covalently attached to a hormonal receptor" (and now newly-recited "hormone receptor") was presented at the June 29, 2005 interview. This support is described in Exhibit 1(b) which was made of record. For the sake of completeness, this information is also given below.

Support for "a polynucleotide sequence covalently attached to a "hormonal receptor" (and "a hormone receptor") as set forth in claim 510 is found in the '995 specification as follows:

Page 12, last fourteen lines:

> ***A molecularly recognizable portion on an analyte may be, for example,*** a polynucleotide sequence, such as RNA or DNA, to be recognized by its complementary sequence; an antigen portion, to be recognized by its corresponding monoclonal or polyclonal antibody; an antibody portion, to be recognized by its corresponding antigen; a lectin portion, to be recognized by its sugar; a sugar portion, to be recognized by its lectin; ***a hormone portion, to be recognized by its receptor; a receptor portion, to be recognized by its hormone***; an inhibitor portion, to be recognized by its enzyme; an enzyme portion, to be recognized by its inhibitor; a cofactor portion, to be recognized by a cofactor enzyme binding . . .

Page 13, last paragraph, through Page 14, first paragraph:

> The portion on the bridging entity capable of recognizing the molecularly recognizable portion on the analyte must contain a molecule or molecular fragment complementary to the recognizable portion on the analyte. Therefore, if the analyte contains a polynucleotide sequence, the recognizing portion of the bridging entity should be complementary polynucleotide sequence or "probe". If the molecularly recognizable portion on the analyte is a generalized antigen, the recognizing portion on the bridging entity should be an

antibody thereto. ***The same is true with respect to the complementary pairs*** sugar/lectin, ***receptor/hormone***, inhibitor/enzyme, and the like, described previously.

Page 15, last paragraph:

Specific examples of bridging entities as used in this invention are covalently attached entities of monoclonal or polyclonal antibodies with polynucleotides, polynucleotides with polynucleotides, protein antigens with polynucleotides, saccharides with polynucleotides, small molecular weight organic compounds with polynucleotides, lectins with polynucleotides, ***receptors with polynucleotides, hormones with polynucleotides***, enzyme inhibitors with polynucleotides, enzyme cofactors with polynucleotides, and combinations and permutations thereof.

Support is also found in various originally filed claims in the '995 specification:

Original Claim 12:

The method of Claim 1 wherein said recognizing portion on said bridging entity comprises a ***hormone***.

Original Claim 13:

The method of Claim 1 wherein said ***recognizing portion on said bridging entity comprises a receptor***.

Original Claim 15:

The method of Claim 1 wherein said ***recognizing portion on said bridging entity comprises*** an enzyme active site, a cofactor binding site, or ***a receptor protein***.

Original Claim 25:

The method of Claim 1 wherein said ***polynucleotide sequence in said bridging entity is covalently attached to a hormone.***

Original Claim 26:

The method of Claim 1 wherein said ***polynucleotide sequence in said bridging entity is covalently attached to a receptor.***

Original Claim 76:

A polynucleotide sequence covalently attached to a receptor.

Original Claim 77:

A polynucleotide sequence covalently attached to a hormone.

In view of the above-cited support in the '995 specification, including the recitation of "receptor/hormone" as one of the complementary pairs, Applicants respectfully request reconsideration and withdrawal of this basis of rejection.

With regard to the change in dependencies for claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408, Applicants would like to begin their remarks by providing the following table to show the dependency changes in the claims at hand.

Pending Claim	Former Base Claim	Pending Base Claim	Comments/Changes in Base Claim
366	363	443	**Process claim 363** recited six composition claims (283, 285, 287, 289 & 291-292) **Process claim 443** recites a single composition claim Base claims in **claim 363** are directed to molecular bridging entity(ies) & non-radioactive signalling entities Composition recited in **claim 443** is also directed to a molecular bridging entity and one or more signalling entities
370	363	443	*ibid.*
374	363	443	*ibid.*
375	363	443	*ibid.*
379	363	443	*ibid.*
384	381	444	**Process claim 381** recited six composition claim (284, 286, 288, 290 & 293-294) **Process claim 444** recites a single composition claim Base claims in **claim 381** are directed to an analyte, molecular bridging entity(ies) & non-radioactive signalling entities Composition recited in **claim 443** is also directed to an analyte, a molecular bridging entity and one or more signalling entities
388	381	444	*ibid.*
392	381	444	*ibid.*
393	381	444	*ibid.*
397	381	444	*ibid.*

Pending Claim	Former Base Claim	Pending Base Claim	Comments/Changes in Base Claim
402	399	445	**Process claim 399** recited four composition claims (283, 285, 287 & 289) **Process claim 445** recites a single composition claim Base claims in **claim 399** are directed to molecular bridging entity(ies) & non-radioactive signalling entities Composition recited in **claim 443** is also directed to a molecular bridging entity and one or more signalling entities
408	405	446	**Process claim 405** recited two composition claim (291 & 292) **Process claim 446** recites a single composition claim Base claims in **claim 405** are directed to an molecular bridging entity(ies) & non-radioactive signalling entities Composition recited in **claim 446** is also directed to a molecular bridging entity and one or more signalling entities

For each of process claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408, it is clear that the previous multiple dependent base composition claims has been eliminated to the recitation of a single composition in the claimed process. At the very least, it would appear that the subject matter of process claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408 is no broader than the previously recited base composition claims, and in fact, it may well be narrower than the former base composition claims.

Moreover, the recited elements for the base compositions correspond in the case of the former base claims and the newly recited composition claim. That is to say, for process claims 366, 370, 374-375 and 379, two elements (molecular

bridging entity(ies) and signalling entities) are recited in the former base composition claims and the newly recited composition. The same holds true with respect to process claim 402 in which two elements are recited in the former base composition claims and two elements are recited in the newly recited composition. In the case of process claims 384, 388, 392-393 and 397, three elements (analyte, molecular bridging entity(ies) and signalling entities) are recited in the former base composition claims and the newly recited composition. The same holds true for process claim 408 and the three elements recited in the former base composition claims and the newly recited composition.

Lastly, it should not be overlooked that the subject matter of the claims at hand is directed to direct detection (claims 366 and 384), indirect detection (claims 370 and 388), members for the signal generating portion (claims 374 and 392), fixing or immobilization (claims 375, 379, 393 and 397) and washing steps (claims 402 and 408). These dependent embodiments have already been deemed to be allowable in other aspects of the invention. See, for example, composition **claim 339** ("wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of directly providing a detectable signal"); **composition claim 343** ("wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of indirectly providing a detectable signal"); **composition claim 347** ("said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement, and a radioactive measurement"); **composition claim 358** ("wherein the analyte is immobilized"); and **composition claim 359** ("wherein the molecular bridging entity is immobilized").

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It is believed, therefore, that the newly submitted combination for claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408 with their new dependencies is supported by the original disclosure.

In view of the foregoing remarks, including the above table, Applicants respectfully request reconsideration and withdrawal of the new matter rejection of claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408.

The Indefiniteness Rejection Under 35 U.S.C. §112, Second Paragraph

Claims 522-525, 527 and 549 stand rejected for indefiniteness under 35 U.S.C. §112, second paragraph. In the Office Action (page 4), the Examiner stated:

> Claims 522, lines 3-4, cites the phrase "said direct signal providing signal generating portion" which lacks antecedent basis due to no such "portion" being described previously in the claim. Clarification via clearer claim wording is requested. Claims which depend directly or indirectly from claim 522 also contain this unclarity due to their dependence. This rejection is necessitated by amendment.

The indefiniteness rejection is respectfully traversed.

In view of the cancellation of claims 522-525, 527 and 549, Applicants believe that the ground of rejection has been rendered moot. Withdrawal of the rejection is respectfully requested.

The First Rejection Under 35 U.S.C. §102

Claims 516-517 and 520-521 stand rejected under 35 U.S.C. §102(b) for anticipation by MOLECULAR CLONING [Maniatis et al. (1982)]. In the Office Action (page 5), the Examiner stated:

> Claim 516 has been amended to include embodiments wherein the claimed DNA molecule carries a polynucleotide sequence complementary to a gene of a nucleic-acid containing organism and a

> further repeating low-complexity polynucleotide sequence of a dinucleotide repeat. As previously cited in the previous office action, mailed 2/17/04, pages 51-54 of Maniatis et al. disclose filamentous phages which contain DNA molecules. Within this citation on page 53, the polylinker region includes repeating low-complexity CC segments as well as citing the presence of the ß-galactosidase gene which is of bacterial origin as a nucleic acid containing organism thus continuing to support this rejection.

The first anticipation rejection is respectfully traversed.

In view of the cancellation of claims 516-517 and 520-521, it is believed that the rejection under §102(b) has been rendered moot. Withdrawal of this rejection is respectfully requested.

The Second Rejection Under 35 U.S.C. §102

Claim 506 stands rejected under 35 U.S.C. §102(b) for anticipation by Langer et al. [PNAS 78(11) 6633 (1981)]. In the Office Action (page 5), the Examiner stated:

> This rejection is reiterated and maintained from the previous office action, mailed 2/17/04, due to biotin attachment to a polynucleotide sequence is covalent which thus supports a covalently attached characteristic when combined with antibody binding to said biotin.
>
> The Declaration of Dr. Alex A. Waldrop, III, filed 9/2/04, is now only relevant to this rejection directed to instant claim 506 since the other claim therein discussed is no longer rejected based on prior art. A reasonable summary of said Declaration is that antibody binding to a polynucleotide via biotin which has been attached to said polynucleotide results from both covalent bonding (polynucleotide to biotin) and noncovalent bonding (antibody to said biotin). These bondings are present as disclosed in Langer et al. as also summarized in said Declaration. Specifically covalent bonding is described in said Declaration in item #13 on page 9. This admission this above prior art rejection based on Langer et al. It is acknowledged that several elements are present in the antibody-biotin-polynucleotide construct of

Langer et al. including carbon atoms, oxygen atoms, covalent bonds, non-covalent bonds, etc. It is noted that instant claim 506 only requires that a polynucleotide is attached "covalently" to an antibody. This presence of a covalent bond between the biotin and polynucleotide is critical to attaching the antibody further thereto, as well as a noncovalent bond, and thus all limitations of instant claim 506 are met by elements within the Langer et al. reference construct, albeit other elements also being present in this embodiment within Langer et al. None of the discussions in said Declaration nor in instant claim 506 negate the above anticipatory correspondence between instant claim 506 and the disclosure of Langer et al.

The second anticipation rejection is respectfully traversed.

In light of the cancellation of claim 506, the anticipation rejection based upon Langer's disclosure has been rendered moot. Reconsideration and withdrawal of the rejection is respectfully requested.

Interview Summary Not Agreed With

Applicants acknowledge the Examiner's remarks in the May 27, 2004 Office Action (page 6, last paragraph) regarding the previous amendment to claim 510 as described in their August 20, 2004 REMARKS (page 77), and reiterated in their November 30, 2004 REMARKS. Applicants' attorney is hopeful that the new matter rejection of claim 510 was satisfactorily resolved at the June 29, 2005 interview which included the suggestion to change "hormonal receptor" to -- hormone receptor -- .

Claim Objection

In the Office Action (page 7), claim 380 was objected to due to depending from a canceled claim. In view of the change in its dependency from claim 279 to 379, the objection of claim 380 has been obviated. Withdrawal of the objection is respectfully requested.

June 7, 2005 Miscellaneous Office Communication

Applicants acknowledge with appreciation is made of the Miscellaneous Office Communication mailed on June 7, 1995, in which the Examiner indicated that Applicants' Request for Interference[3] is being held in abeyance at this time due to awaiting compliance with 37 CFR 41.102 regarding completion of examination. It is believed that the claim cancellations effected by this paper and the other claim amendments places all of the now pending claims in allowable condition so that the interference can proceed.

An early indication both as to the allowability of the pending claims and suspension of *ex parte* prosecution pending resolution of the interference is respectfully requested.

* * * * * * *

[3] Applicants' Third Request For An Interference Pursuant To 37 C.F.R. §1.607 was filed on July 23, 2003.

SUMMARY & CONCLUSIONS

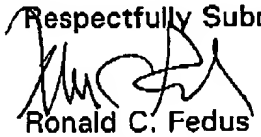
This paper follows the PTO interview held on June 29, 2005, and it is directed to the Office Action mailed on May 27, 2005.

As set forth in the complete listing of the claims provided above, the pending claims in this application include 283-362, 364-380, 382-398, 400-404, 406-439, 441-505, 507-508, 510-511 and 528-547. Amended in this paper are claims Claims 380 and 510. CANCELLED are claims 506, 516-525, 527 and 548-549.[4] No new claims have been added.

No fee is believed due in connection with the filing of this Amendment. If any fee, such as any extension fee or claim fee is due, however, The Patent and Trademark Office is hereby authorized to charge the amount of any such fee to Deposit Account No. 05-1135, or to credit any overpayment thereto.

If the Examiner has any questions, he is invited to contact the undersigned attorneys.

Respectfully Submitted



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[4] These claims are cancelled without prejudice or disclaimer to Applicants' right to pursue the subject matter of these claims at a later date or opportunity.